CHAPTER 7 CONCLUSIONS AND RECOMMENDATIONS

This chapter first presents areas of controversy and unresolved issues, followed by the conclusions and recommendations for the Tentatively Selected Plan (TSP).

7.1 AREAS OF CONTROVERSY AND UNRESOLVED ISSUES

1. *Public support, especially in St. Bernard Parish, for closure of the Mississippi River Gulf Outlet (MRGO) versus navigation interests to keep the channel open*. Many residents of St. Bernard Parish have expressed concern with closing the MRGO in order to reverse the perceived land loss and ecological damage attributed to the channel.

2. *Widespread demand by Terrebonne and Barataria Basins residents for the immediate restoration of the Barataria-Terrebonne Estuary before other regions of the United States*. Many residents of Terrebonne and Barataria Basins have expressed scoping concerns that this area has suffered the greatest land lost and ecological degradation and therefore should have immediate restoration efforts directed to address these problems.

3. *Divided public support between comprehensive, long-term restoration efforts versus near-term restoration efforts*. Elements of the public expressed concern that the restoration of the LCA must include a long-term, comprehensive approach to significantly reverse the current trend of land loss and ecosystem degradation. While many members of the public acknowledged the need for a "near-term" effort, as embodied by the proposed LCA Plan, the majority viewed such an effort only as the initial step of the overall LCA restoration effort.

4. *Widespread public demand for the immediate construction of restoration actions versus requirements for conducting additional study of restoration problems.* Elements of the public expressed concern that the LCA restoration effort will focus on the need for more studies rather than construction, operation and maintenance of restoration projects. In addition, they expressed their belief that immediate action should be taken to address LCA ecosystem degradation issues, and that there are enough existing studies of the problem to warrant and justify that immediate action.

5. *Localized public support, especially in Subprovince 3, for restoration of the Bayou Chevreuil reef.*

6. *Public concern for additional salinity controls in the Chenier Plain and inclusion of additional restoration features for this subprovince in the implemented LCA Plan.*

7. *Public support in Subprovince 3 for the immediate implementation of the Bayou Lafourche reintroduction*.

8. *Public support for the immediate construction of the Third Delta Conveyance channel*.

9. *Widespread public concern that oyster lease issues will make restoration efforts prohibitively expensive*. Elements of the public expressed concern that restoration efforts, particularly projects that would involve freshwater diversions, would affect existing oyster beds via lowering salinity levels, thereby creating a situation where excessive compensation for potentially affected oyster leases would be necessary. In light of the significant damages awarded to oyster lease holders [settlement is still pending appeal] as a result of prior restoration efforts and implementation of water control structures, the concern was that similar damage awards in response to LCA restoration projects would prevent the implementation of those LCA Plan restoration features that would significantly alter salinity regimes and impact oyster beds (e.g. freshwater diversions and reintroductions). Note: The passage of a state constitutional amendment is intended to hold harmless the state government from future such claims—this amendment has yet to be tested in judicial proceedings.

10. *Public concern that diversions will over-freshen receiving basins. Elements of the public expressed concern that alternations of salinity regimes in the LCA as a result of proposed restoration features would adversely impact commercial and recreational*

11. *Concern that diversions could create widespread algae blooms in interior bays and lakes.*

12. *Concern with changing the existing operational scheme of the Old River Control Structure in regulating river flows in the Mississippi and Atchafalaya Rivers*.

13. *Concern that LCA restoration features in Subprovince 3 would move too much additional water and sediment into the area*.

14. *Concern with impediments to navigation and proposed re-routing of the Mississippi River and the Atchafalaya River Navigation channels*. Elements of the public expressed concern that proposals to re-route portions of the Mississippi River and the Atchafalaya River Navigation channels could result in delays and restricted access, which could interrupt the transport of goods and commodities into and out of various ports in the LCA.

15. *Real property rights issues such as public access, mineral rights, and the public's perception that federal monies are being spent on restoring private properties*. Elements of the public expressed concern that restoration efforts using public funds (i.e. Federal funds) could result in situations where some or a majority of benefits (e.g. land building) would occur on private lands.

16. *Widespread public support that protection of people and culture should take precedence over ecosystem restoration*.

7.2 CONCLUSIONS AND RECOMMENDATIONS

The District Engineer has considered the environmental, social, and economic effects, the engineering feasibility, and the comments received from other resource agencies and the public during this LCA Study effort and plan formulation. Based upon the sum of this information, the District Engineer recommends for implementation a LCA Restoration TSP that includes the highest priority actions from among those considered during plan formulation. The District Engineer is convinced that the TSP would begin to reverse the current trend of degradation of Louisiana's coastal ecosystem, support Nationally significant living resources, provide a sustainable and diverse array of fish and wildlife habitats, reduce nitrogen delivery to offshore gulf waters, provide infrastructure protection, and make progress towards a more sustainable ecosystem.

The recommended TSP has seven components, with such modifications thereof as in the discretion of the Commander, HQUSACE, may be advisable. Programmatic authorization is sought for recommendations 1-5. All programmatic authority would be assigned to the Secretary of the Army and subject to the provisions of Section 902 of the WRDA 1986 (Public Law 99-662, dated Nov. 17, 1986). Recommendations 6 and 7 would proceed through the standard authorization processes.

The estimated cost of the TSP components being presented for programmatic authorization and approval is displayed in **table 7-1**. The estimated cost of the programmatic component of the TSP is $1,171,110,000. The total cost of the TSP is estimated at $1,961,380,000. **Table 7-2** outlines the Federal and non-Federal cost sharing responsibilities as defined by current guidance. **Table 7-3** presents the estimated annual operations and maintenance costs for each of the near-term critical restoration features presented in the LCA TSP. Operations and maintenance of all constructed TSP features would be the responsibility of the non-Federal sponsor as detailed in section 4.6.4 of the Main Report.

Table 7-1
TSP Recommended Component Cost Estimates
(June 2004 Price Levels)

Item			Cost ($)
MRGO environmental restoration features		$	80,000,000
Small diversion at Hope Canal		$	30,025,000
Barataria Basin Barrier shoreline restoration, Caminada Headland, Shell Isl.		$	181,000,000
Small Bayou Lafourche reintroduction		$	90,000,000
Medium diversion at Myrtle Grove w/ possible dedicated dredging		$	146,700,000
	SUBTOTAL	$	527,725,000
Real Estate		$	66,439,000
First cost	SUBTOTAL	$	594,164,000
Feasibility Level Decision Investigations and NEPA Documentation		$	55,609,000
PED		$	37,072,000
Near-term Approval and Implementation Documentation Cost	SUBTOTAL	$	92,681,000
Engineering & Design (E&D) / Supervision & Administration (S&A)		$	99,265,000
Programmatically Authorized TSP Cost		**$**	**786,110,000**
Science & Technology Program Cost (10 year Program)		**$**	**100,000,000**
Demonstration Program Cost (10 year Program)*		**$**	**175,000,000**
Beneficial Use Dredge Material Program*		**$**	**100,000,000**
Modification of Existing Structures		**$**	**10,000,000**
Total Programmatically Authorized TSP Cost		**$**	**1,171,110,000**
Multi-purpose operation of the Houma Navigation Canal Lock #		$	-
Terrebonne Basin Barrier shoreline restoration E. Timbalier, Isle Dernieres		$	84,850,000
Maintain Land Bridge between Caillou Lake & Gulf of Mexico		$	41,000,000
Small diversion at Convent / Blind River.		$	28,564,000
Amite River diversion (spoil banks gapping)		$	2,855,000
Medium diversion at White's Ditch		$	35,200,000
Stabilize Gulf Shoreline at Pointe Au Fer Island		$	32,000,000
Convey Atchafalaya River Water to Northern Terrebonne marshes		$	132,200,000
Caernarvon - optimize for marsh creation (project modification)		$	1,800,000
Davis Pond - optimize for marsh creation (project modification)		$	1,800,000
	SUBTOTAL	$	360,269,000
Real Estate		$	208,100,000
First cost	SUBTOTAL	$	568,369,000
Feasibility Level Decision Investigations and NEPA Documentation		$	54,100,000
PED		$	36,067,000
Near-term Approval and Implementation Documentation Cost	SUBTOTAL	$	90,167,000
Engineering & Design (E&D) / Supervision & Administration (S&A)		$	71,734,000
Conventionally Authorized TSP Cost		**$**	**730,270,000**
Mississippi River Hydrodynamic Study		$	10,250,000
Third Delta		$	15,290,000
Upper Atchafalaya Basin Study w/ Mod Operations of Old Riv Control ^		$	-
Chenier Plain Freshwater Management and Allocation Reassessment		$	12,000,000
Mississippi River Delta Management Study		$	15,350,000
Acadiana Bay Estuarine Restoration		$	7,110,000
Large-scale Studies Cost		**$**	**60,000,000**

Table 7-2
TSP Cost Sharing Distribution.
(June 2004 Price Levels)

Item	Federal Share	Non-Federal Share	Total Cost ($)
Feasibility Decision and NEPA Documentation - (50/50)	$ 27,804,500	$ 27,804,500	**$ 55,609,000**
Near-term Feature First Construction Cost - (65/35)	$ 343,021,250	$ 184,703,750	$ 527,725,000
PED - (65/35)	$ 24,096,800	$ 12,975,200	$ 37,072,000
(E&D) / (S&A) - (65/35)	$ 64,522,250	$ 34,742,750	$ 99,265,000
Real Estate - (0/100)	$ -	$ 66,439,000	$ 66,439,000
Programmatically Authorized TSP Implementation Subtotal	$ 431,640,300	$ 298,860,700	**$ 730,501,000**
Science & Technology Program (10 year Program) - (65/35)	$ 65,000,000	$ 35,000,000	**$ 100,000,000**
Demonstration Program (10 year Program) - (65/35)	$ 113,750,000	$ 61,250,000	**$ 175,000,000**
Beneficial Use Dredge Material Program - (75/25)	$ 75,000,000	$ 25,000,000	**$ 100,000,000**
Modification of Existing Structures - (65/35)	$ 6,500,000	$ 3,500,000	**$ 10,000,000**
Total Programmatically Authorized TSP Subtotal	**$ 719,694,800**	**$ 451,415,200**	**$ 1,171,110,000**
Feasibility Decision and NEPA Documentation - (50/50)	$ 27,050,000	$ 27,050,000	**$ 54,100,000**
Near-term Feature First Construction Cost - (65/35)	$ 234,174,850	$ 126,094,150	$ 360,269,000
PED - (65/35)	$ 23,443,550	$ 12,623,450	$ 36,067,000
(E&D) / (S&A) - (65/35)	$ 46,627,100	$ 25,106,900	$ 71,734,000
Real Estate - (0/100)	$ -	$ 208,100,000	$ 208,100,000
Conventionally Authorized TSP Implementation Subtotal	$ 304,245,500	$ 371,924,500	**$ 676,170,000**
Large-scale Studies - (50/50)	$ 30,000,000	$ 30,000,000	**$ 60,000,000**
Total Coventionally Authorized TSP Subtotal	**$ 361,295,500**	**$ 428,974,500**	**$ 790,270,000**
Total Tentatively Selected Plan Cost Share	**$ 1,080,990,300**	**$ 880,389,700**	**$ 1,961,380,000**

Table 7-3
TSP Features
Annual O&M Cost Estimates.
(June 2004 Price Levels)

Item		O&M Cost ($/yr)
MRGO environmental restoration features	$	-
Small diversion at Hope Canal	$	120,000
Barataria Basin Barrier shoreline restoration, Caminada Headland, Shell Isl.	$	500,000
Small Bayou Lafourche reintroduction	$	1,400,000
Medium diversion at Myrtle Grove w/ possible dedicated dredging	$	120,000
Total Programmatically Authorized TSP Cost	$	2,140,000
Multi-purpose operation of the Houma Navigation Canal Lock	$	-
Terrebonne Basin Barrier shoreline restoration E. Timbalier, Isle Dernieres	$	2,760,000
Maintain Land Bridge between Caillou Lake & Gulf of Mexico	$	745,000
Small diversion at Convent / Blind River.	$	120,000
Amite River diversion (spoil banks gapping)	$	-
Medium diversion at White's Ditch	$	120,000
Stabilize Gulf Shoreline at Pointe Au Fer Island	$	644,000
Convey Atchafalaya River Water to Northern Terrebonne marshes	$	643,000
Total Conventionally Authorized TSP Cost	$	5,032,000
Total Tentatively Selected Plan Cost	**$**	**7,172,000**

The seven components of the TSP are:

RECOMMENDED FOR PROGRAMMATIC AUTHORIZATION

1. Near-Term Critical Restoration Features. The TSP includes 15 near-term critical restoration features (listed in **tables 7-4a** and **7-4b**), five of which are recommended for implementation through programmatic authority. Implementation of these five restoration features would be subject to subsequent completion of NED/NER analysis, NEPA compliance, and appropriate feasibility-level decision documents. These feasibility-level decision documents would be constructed utilizing current policy and guidelines to provided a sound basis for decision makers at all levels. The District Engineer recommends that Congress authorize implementation of the five near-term critical restoration features detailed below, subject to review and approval of the feasibility-level decision documents by the Secretary of the Army.

Initial analysis indicates that these features address the most critical ecological needs of the coastal area in locations where delaying action would result in a "loss of opportunity" to achieve restoration and/or much greater restoration costs. These five critical near-term features present a range of effects essential for success in restoring the Louisiana coast.

The benefits provided by these features include the sustainable reintroduction of riverine resources, rebuilding of wetlands in areas at high risk for future loss, the preservation and maintenance of critical coastal geomorphic structure, and perhaps most importantly, the preservation of critical areas within the coastal ecosystem, and the opportunity to begin to identify and evaluate potential long-term solutions. Based on a body of work both preceding and including this study effort, the PDT produced an estimate of average annual costs and benefits for these five features. This information shows that average annual environmental output for this programmatically authorized feature package would be on the order of 22,000 habitat units at an average annualized cost of $2,600 per unit provided.

The five near-term critical restoration features that the District Engineer recommends for programmatic authorization are:

- MRGO Environmental Restoration Features
- Small Diversion at Hope Canal
- Barataria Basin Barrier Shoreline Restoration, Caminada Headland, Shell Island
- Small Bayou Lafourche Reintroduction
- Medium Diversion at Myrtle Grove with Dedicated Dredging

2. Science & Technology (S&T) Program. The District Engineer recommends that a LCA S&T Program be funded at an amount not to exceed $100,000,000 over the initial 10 years of the LCA program. This S&T Program would support all facets of program implementation by providing for acquisition of data, developing analytic tools, and providing expert recommendations to the LCA Program Manager within the adaptive management framework. Major benefits of the S&T Program would be decrease scientific and technological uncertainties and optimize attainment of restoration objectives.

3. Demonstration Projects. The District Engineer recommends that demonstration projects developed by the S&T Program be funded as a construction item at an amount not to exceed $175,000,000 over 10 years, including a maximum cost of $25 million per project. Five initially identified candidate demonstration projects would serve to decrease critical uncertainties and provide valuable lessons learned to improve overall program performance. These first five candidate demonstration projects have an estimated total project cost of $82,300,000. For responsiveness to the need for an additional 5 to 20 demonstration projects to be defined during implementation, the LCA Programmatic Authority for demonstration projects would include an additional $92,700,000. The District Engineer recommends that Congress authorize implementation of the $175,000,000 demonstration project program subject to review and approval of individual project feasibility-level decision documents by the Secretary of the Army. In addition to standard feasibility-level decision document information, the demonstration project feasibility-level documents would address:

- Major scientific or technological uncertainties to be resolved; and

- A monitoring and assessment plan to ensure that the demonstration projects would provide results that contributes to overall LCA program effectiveness.

The purpose of the recommended LCA S&T Program demonstration projects is to resolve critical areas of scientific, technical, or engineering uncertainty while providing meaningful restoration benefits whenever possible. The types of uncertainty that are best resolved through implementation of appropriately scaled demonstration projects are the "Type 2" uncertainties introduced in section 3.1.1. After design, construction, monitoring, and assessment of individual demonstration projects, the LCA program will leverage the lessons learned to improve the planning, design, and implementation of other LCA restoration projects. Beyond serving to resolve the list of "Type 2" uncertainties detailed in this report, demonstration projects may be necessary to address uncertainties discovered in the course of individual project implementation or during the study of large-scale and long-term restoration concepts.

The District Engineer recommends initiation of the following five demonstration projects to address critical uncertainties identified during the study effort:

- Wetland Creation in Vicinity of Barataria Chenier Unit (freshwater chenier restoration)
- Pipeline Conveyance of Sediment to Maintain Land Bridge
- Pipeline Canal Restoration (various methods and locations)
- Shoreline Erosion Protection Test Sections in the Vicinity of Rockefeller Refuge
- Barrier Island Sediment Sources Demo in Vicinity of Terrebonne Barrier Island

4. Programmatic Authority for the Beneficial Use of Dredged Material.
The District Engineer recommends that Congress authorize $100,000,000 over the initial 10 years of the LCA program for execution of additional beneficial use of dredged material projects within the LCA. Based on the requested funds and a 10-year period of implementation, it is expected that this beneficial use program could contribute to the attainment of approximately 21,000 acres of newly created wetlands. The District Engineer recommends that this program follow the guidelines of the Section 204 Continuing Authorities beneficial use program that provides authority for the USACE to restore, protect, and create aquatic and wetland habitats in connection with construction or maintenance dredging of an authorized project.

5. Programmatic Authority to Initiate Studies of Modifications to Existing Water Control Structures. The District Engineer recommends that Congress authorize $10,000,000 over the initial 10 years of the program for use in studies of potential modification or rehabilitation of existing water resources structures and/or their operation management plans for the purpose of contributing to the attainment of LCA ecosystem restoration objectives. This authority would improve environmental performance within a project purpose, by authorizing the use of LCA funds.

RECOMMENDED FOR APPROVAL WITH FUTURE AUTHORIZATION

6. Standard Authorization of Other Near-Term Critical Restoration Features.
In addition to the five programmatically authorized critical near-term restoration features, the District Engineer recommends approving the other ten TSP features under a standard authorization process. Furthermore, the District Engineer recommends that this approval provide funding towards full development of feasibility reports and preconstruction engineering and design totaling $90,167,000. These features would be authorized via future WRDA. The 10 features are:

- Multi-purpose operation of the Houma Canal Lock
- Terrebonne Basin barrier-shoreline restoration, East Timbalier, Isle Dernieres
- Maintain land bridge between Caillou Lake and Gulf of Mexico
- Small diversion at Convent/Blind River
- Increase Amite River diversion canal influence by gapping banks
- Medium diversion at White's Ditch
- Stabilize gulf shoreline at Pointe Au Fer Island
- Convey Atchafalaya River water to northern Terrebonne marshes
- Re-Authorization of Caernarvon diversion – optimize for marsh creation
- Re-Authorization of Davis Pond diversion – optimize for marsh creation

7. Large-Scale and Long-Term Concepts Requiring Detailed Study. The District Engineer recommends development of studies that evaluate large-scale and long-term coastal restoration concepts. Investigations of the following five long-term large-scale concepts will fully determine their potential for achieving restoration objectives beyond the critical needs, near-term focus of other TSP components. Upon completion of detailed feasibility studies, the results from these efforts would be subject to the standard authorization process. The estimated cost of these continued development studies is $60,000,000.

- Mississippi River Hydrodynamic Model
  - Mississippi River Delta Management Study
  - Third Delta Study
  - Upper Atchafalaya Basin Study (including evaluation of alternative operational schemes of Old River Control Structure *funded under MR&T*)
- Chenier Plain Freshwater Management and Allocation Reassessment Study
- Acadiana Bay Estuarine Restoration Study

Table 7-4a Components of the LCA Tentatively Selected Plan

Recommended for Programmatic Authorization *(Implemented with Programmatic Approval Authority)*
1. Near-term Critical Restoration Features • (1) MRGO Environmental Restoration features • (2) Small Diversion at Hope Canal • (3) Barataria Basin Barrier shoreline restoration, Caminada Headland, Shell Island • (4) Small Bayou Lafourche Reintroduction • (5) Medium Diversion at Myrtle Grove with Dedicated Dredging
2. S&T Program
3. Initial S&T Program Demonstration Projects • Wetland Creation in Vicinity of Barataria Chenier Unit (freshwater chenier restoration) • Pipeline Conveyance of Sediment to Maintain Land Bridge • Pipeline Canal Restoration (various methods and locations • Shoreline Erosion Protection Test Sections in the Vicinity of Rockefeller Refuge • Barrier Island Sediment Sources Demo in Vicinity of Terrebonne Barrier Islands
4. Programmatic Authority for the Beneficial Use of Dredged Material
5. Programmatic Authority to Initiate Studies of Modifications to Existing Water Control Structures

Table 74b. Components of the LCA Tentatively Selected Plan.

Recommended for Approval With Future Authorization *(Implemented with Standard Approval Authority)*
6. Other Near-term Critical Restoration Features • (6) Multi-purpose Operation of the Houma Navigation Canal Lock • (7) Terrebonne Basin Barrier-shoreline Restoration, E. Timbalier, Isle Dernieres • (8) Maintain Land Bridge between Caillou Lake and Gulf of Mexico • (9) Small Diversion at Convent / Blind River • (10) Increase Amite River Diversion Canal Influence by gapping banks • (11) Medium Diversion at White's Ditch • (12) Stabilize Gulf Shoreline at Pointe Au Fer Island • (13) Convey Atchafalaya River water to Northern Terrebonne Marshes • (14) Re-authorization of Caernarvon Diversion – optimize for marsh creation • (15) Re-authorization of Davis Pond – optimize for marsh creation
7. Large-scale and Long-term Concepts Requiring Detailed Study • Mississippi River Hydrodynamic Model ▪ Mississippi River Delta Management Study ▪ Third Delta Study ▪ Upper Atchafalaya Basin Study including evaluation of alternative operational schemes of Old River Control Structure *funded under MR&T* • Chenier Plain Freshwater Management and Allocation Reassessment Study • Acadiana Bay Estuarine Restoration Study

Ecosystem Restoration projects do not currently include provisions to afford the non-Federal sponsor credit towards its cost-sharing for work-in-kind, other than the standard LERRD credit. Given the scope and nature of the TSP, the demonstrated successes resulting from the current collocation team at the New Orleans District, and the opportunities to utilize the knowledge base in Louisiana, the District Engineer recommends that during implementation of the TSP, the non-Federal sponsor be afforded credit for the value of the following work-in-kind:

1. Feasibility-level decision documents conducted for programmatically authorized features, estimated at 50 percent of study cost expended within the first ten years of authorization;
2. Pre-construction, engineering, and design (PED) for the programmatically authorized features that are approved by the Secretary of the Army, estimated at 25 percent of PED costs within the first 10 years of authorization;
3. Academic and field research to support the S&T Program, estimated to be 35 percent of the S&T Program costs within the first 10 years of authorization; and
4. Study costs associated with investigations conducted by the state, regarding the following large-scale and long-term concepts identified in the TSP as requiring detailed study, estimated to be 50 percent of the study costs within the first 10 years of authorization:
    a. Third Delta Conveyance channel
    b. Acadiana Bay Estuarine restoration
    c. Mississippi River Delta management.

Credit for such work-in-kind will require approval by the Secretary of the Army, based on the Secretary's determination that such work-in-kind is compatible and integral to the project and the costs of such work are allocable, allowable, and reasonable. The total amount of work-in-kind credit shall not exceed the relevant non-Federal share, and there shall be no reimbursement for the value of work that may exceed the relevant non-Federal share.

Crediting for the above items is allowable only for work-in-kind that occurs after the signing of the appropriate agreements, except that the Feasibility Cost Sharing Agreements for those studies identified above in item 4 may allow credit for work-in-kind that occurred between March 2002, when the Feasibility Cost Sharing Agreement was executed for the LCA Comprehensive Study, and the date of authorization of the TSP.

When the non-Federal sponsor requests credit for work-in-kind services, the source of any funds not originating from the non-Federal sponsor must be identified.

All of these recommendations are made with the provision that prior to implementation, the non-Federal sponsor will agree to perform all of the local cooperation requirements and non-Federal obligations. These requirements and non-Federal sponsor obligations include, but are not necessarily limited to those described in section 4.6.4 of the Main Report.

The recommendations contained herein reflect the information available at this time and current Department of the Army policies governing formulation of individual projects. They do not reflect program and budgeting priorities inherent in the formulation of a National Civil Works

construction program nor the perspective of higher review levels within the Executive Branch. Consequently, the recommendations may be modified before they are transmitted to the Congress as proposals for authorization and implementation funding. However, prior to transmittal to the Congress, the sponsor, the state, interested Federal agencies, and other parties will be advised of any modifications and will be afforded an opportunity to comment further.